Editorial

Distance learning and telemedicine-a unique technology

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In a time of increasing demands on physician productivity, computer and communication technologies allow health professionals to experiment with many applications that may provide opportunities to meet clinical demands while still participating in educational and research activities. "Telehealth" is a comprehensive term for the support of long distance clinical healthcare, patient and professional health-related education, public health, and health administration. Educational opportunities are growing exponentially for those who cannot attend traditional courses because of limited time or geographic considerations. Research and medical information and medical consultations are being delivered instantly across wide geographic areas. Telehealth, therefore, includes telemedicine and reflects the multidisciplinary nature of the field and the rapid growth of telecommunications and web-based healthcare resources[1].

Telehealth can improve access to healthcare. The initial thrust of telemedicine has focused on linking primary care physicians with medical specialists located at distant sites and is being utilized by health providers in a growing number of medical specialties (including dermatology, oncology, radiology, surgery, cardiology, and psychiatry). Benefits include[2-3]:

1. Improved access and faster diagnosis and treatment

2. Improved quality of care through increased consultation and collaboration and increased patient involvement

3. Reduced professional isolation and the promotion of collaborative consultation partnerships

4. Reduced costs from the centralization of resources, reduced travel, and the avoidance of the duplication of services

Communications technologies available today (though dependent on individual systems' capacities) are able to connect healthcare professionals (with patients and other healthcare professionals) and information systems (for data and information exchange) located at distant sites. Emerging medical applications that can occur between geographically dispersed locations include initial and continuing medical education, clinical services delivery and consultation, patient education, and healthcare management and administration.With increasing demands on physicians with regards to their knowledge base and productivity, distance learning and telehealth may provide an opportunity for busy clinicians to meet clinical responsibilities to a more dispersed and diverse population while still participating in educational activities. These "tele" programs may take more time and be more expensive in the short term; however, as the technology becomes more prevalent and the number of users increases, these programs may offer an efficient alternative to meet the escalating demands of a rapidly changing healthcare environment. With interactive telemedicine the physician can interact in real-time with a patient at a remote location through videoconferencing and technology-enabled medical instrumentation. Physical examinations are performed using portable video units fitted with special scopes that capture images and other information, which are then transmitted to a major medical center to facilitate diagnosis and follow-up care[4]. More sophisticated systems allow the physician to access electronic patient records while continuing to interact with the patient. Such systems also store information from the current session for later review or for tracking patient progress. Interactive systems may be built onto a personal computer, which runs the medical record software and integrates videoconferencing and file transfer capabilities[5].

Telehealth technologies provide opportunities to meet the rapidly growing needs of consumers and healthcare practitioners. Many in need of services have limited access to high-end technologies. An argument has been made that the lowest level of technology needed to carry out a task should be used, if it is capable of providing the necessary services. Videoconferencing capabilities allow healthcare practitioners to engage in virtual face-to-face encounters with patients or other healthcare providers. A variety of levels of sophistication in these videoconferencing systems are available.

Telemedicine programmes can improve medical education and access to current medical literature in developing countries. Tele-education programmes pool resources and increase access to information. The variety of lectures broadcast illustrates the broad outreach of telemedicine delivered educational programmes for all medical sub-specialties. In addition, the high number of nurse participants would support future initiatives to specifically target continuous nursing education. These systems are cost effective and open the doors for research and international partnership

Providing healthcare in Nepal is challenging due to the difficult geographic terrain, limited availability of funding and many other issues. In order to match the success achieved in this area by many developed countries, it is necessary to efficiently use the available resources. Information and Communication Technology (ICT) is one of the few technologies in medicine that continues to become more affordable and efficient. As a result, telemedicine and tele-education can become distinctive features of NEPAL.

Several efforts have been ongoing in Nepal to provide access on quality health services for rural majority through Telemedicine. Kathmandu Model Hospital, connects more than 80 Km far rural community hospitals through setting up wireless network. This is very successful initiative and it has been replicating in different remote areas of Nepal. Currently they have connected 10 rural health centers and have been conducting regular virtual classes and real time tele-consults.

Government of Nepal (GoN), Ministry of Health (MoH) and Department of Health Services are also providing telemedicine services. Currently the telemedicine center is located in Patan Hospital. They are providing services to 25 districts and planning to add 5 more districts. The telemedicine services of Government of Nepal include:

1) Live video conferencing
25 districts have a set of video conferencing tools, which they can connect to the telemedicine center and use this services.

2) Store and forward mechanism
 MoH provides an online portal with the details of the patients who need the help from the consultants.

3) Hello swasthya
They provide a toll-free number "1115" from NTC and NCELL. The public can also use this service to get the solution of the health related problems.

B.P.Koirala Institute of Health sciences has also implemented the ehealth and Telemedicine. The unit is established and the eLearning is running successfully in various District hospitals of Eastern Nepal. Telemedicine is started form March 2015 as a pilot phase.

Despite undoubted advantages of telemedicine it remains grossly underutilized in many developing countries where its relevance is more. Implementing a telehealth service is therefore clearly a major challenge. The four key barriers identified are:

1. Technical factors, including clinical limitations and data security

2. Behavioral factors, including clinician aversion to change, and unwillingness to accept technical changes without proof of improved performance

3. Economic and financial factors, including costs of implementation (equipment, software and training) and difficulties in establishing precise outcomes, costs and benefits.

4. Managerial and organizational factors, specifically a lack of support from senior management, stemming from the inability to clearly assess benefits, and a lack of resources for investments in new technologies.

Geographical variation and lack of infrastructures as well as other resources (including human) are common hinderances of health care delivery in many developing countries like Nepal. Provision of real time videoconferencing can help overcome some of the problems created by their hinderances. It is the lack of preparedness (in term of awareness) on the receiver's side that is more likely to be contributing to under utilization of the facility than from the provider's side. Therefore, for better exploitation of the concept of telehealth it has already been late to start awareness campaigns at local and national levels.

References
1. Kumekawa J. Telehealth and the Internet. Office for the Advancement of Telehealth, Health Resources and Services Administration, July 2000.

2. Institute of Medicine. Telemedicine: A Guide to Assessing Telecommunications in Health Care, Committee on Evaluating Clinical Applications of Telemedicine. Field MJ, Editor. Washington DC: National Academy Press, 1996.

3. Joint Working Group on Telemedicine. Telemedicine Report to Congress. U.S. Department of Commerce and the U.S. Department of Health and Human Resources. January 31, 1997.

4. Kingsnorth A.,Vranch A.,Campbell J.Training for surgeons using digital satellite television and videoconferencing. J Telemed Telecare2000; 6(1): 29–31.

5. Geisler E, Wickramasinghe N. The Role and Use of Wireless Technology in the Management and Monitoring of Chronic Diseases. s.l. : IBM Center for the Business of Government, 2009.

6. Suppl. S. Telemedicine Information Exchange. National Library of Medicine. Brwon N. What is telemedicine? Association of Telehealth Service Providers, 1996.

7. Protecting Consumers Online: A Federal Trade Federal Commission Report on the First Five Years of Its Internet Law Enforcement Program. Federal Trade Commission. December 1999.

8. HRSA Focuses Agency Resources on Telehealth. Rockville, MD, Health Resources and Services Administration, HRSA Press Office, May 22, 1998.